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# Assessment of environmental law awareness and pro-environmental behavior among **DEBESMSCAT-** Cawayan Campus Agriculture students

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# ABSTRACT

Environment and natural resources were crucial to the existence of abiotic and biotic organisms, which included human beings. As the environment degraded, one of the key solutions was the next generation's perception, understanding, and attitude toward environmental laws. Thus, the paper studied the knowledge and attitude of Bachelor of Science in Agriculture students toward environmental laws in the Philippines. The study was conducted through a structured survey questionnaire and interview. The study revealed that students of the Bachelor of Science in Agriculture of the DEBESMSCAT-Cawayan Campus had poor knowledge and awareness of environmental laws. However, their attitude towards environmental law enforcement was considered essential. Additionally, students believed that the government was not effective in enforcing environmental laws in the country, their level of confidence in the government towards environmental law was low, and they perceived that most people were not aware of environmental laws. Lastly, community clean-up drives, tree planting, conservation of electricity, and everyone's responsibility were pro-environmental behaviors of Bachelor of Science in Agriculture students. Therefore, strict implementation and molding of agriculture students in their subjects were necessary to strengthen their attitude toward environmental laws. It was also vital to enhance their leadership skills to influence the community as they had positive behavior in the implementation of environmental laws.

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#### INTRODUCTION

The preservation and safeguarding of the environment are of utmost importance for the continuation of life on Earth. As humans depend on various resources such as food, air, water, and oxygen, it becomes imperative for individuals to recognize their role in protecting the environment (Fallah Shayan, 2022). However, over the past decades, the condition of our environment has been deteriorating. The Intergovernmental Panel on Climate Change (IPCC) reported in 2021 that the Earth's temperature is projected to rise by 1.5 degrees Celsius within the next 20 years, primarily due to human activities, thereby significantly affecting future environmental conditions (Buis, 2019). To address these concerns and prevent environmental degradation, the implementation of effective environmental laws becomes essential. Environmental laws serve as a means to prevent and penalize actions that may harm or destroy the environment (Zhang et al., 2022).

Global efforts to tackle critical environmental issues, such as climate change, mass extinction of animals, and ozone depletion, are reflected in international environmental law, a set of accords and concepts. The primary objective of environmental law is to manage environmental risks and ensure long-term environmental protection (Chu & Karr, 2017). Individuals bear the responsibility of establishing limitations and taking proactive measures to protect the environment. Among the possible approaches to addressing existing environmental issues is enhancing environmental awareness and understanding among individuals (Kousar et al., 2022). Climate-related challenges significantly contribute to environmental destruction, and urgent attention is required to mitigate their impact. Issues such as global warming, resulting from the combustion of fossil fuels and subsequent greenhouse gas emissions, have had devastating consequences worldwide. The climate crisis has led to increasingly severe tropical storms, hurricanes, heat waves, and flooding (Clarke et al., 2022). Another contributing factor to environmental deterioration is poor governance, as noted by economists Stern & Stiglitz (2016), who identify market failures as a consequence of the climate crisis. Environmentalists and economists have advocated for policymakers to increase the costs associated with greenhouse gas emissions to rectify this market failure and promote the development of low-carbon technologies. One potential solution is the implementation of carbon taxes. Furthermore, other pressing environmental concerns include food waste, biodiversity loss, plastic pollution, deforestation, air pollution, melting ice caps, rising sea levels, ocean acidification, agriculture, food and water insecurity, fast fashion, and textile waste, overfishing, and cobalt mining (Nash et al., 2019).

In today's society, it is expected that students, particularly those pursuing agricultural studies, should possess the necessary knowledge, skills, and values to care for the environment (Renandang & Dalonos, 2019). However, the reality often falls short of this expectation. The objectives of this research study are to assess the socio-demographic profile of Bachelor of Science in Agriculture students, measure their awareness and understanding of environmental laws, determine their attitudes towards environmental laws, examine their perception of environmental laws and their enforcement, evaluate their knowledge and attitude about environmental laws, and assess their pro-environmental behavior.

Climate change poses a significant threat to the environment, while plastic pollution continues to contribute to habitat loss (Lincoln et al., 2022). The environment plays a crucial role in supporting human life, yet its destruction has led to numerous problems that are cause for concern. The responsibility for these environmental issues lies primarily with human actions, including those of students who are expected to be stewards of the Earth (Yue et al., 2020). However, students may not always be mindful of the consequences of their actions (Sorqvist & Langeborg, 2019). If this situation persists, environmental issues will continue to worsen. Therefore, this study aims to determine the level of concern for the environment among agriculture students and shed light on their awareness, attitudes, and pro-environmental behavior.

#### **OBJECTIVES OF THE STUDY**

The general aim of this study was to assess the knowledge, attitude, and pro-environmental behavior of Bachelor of Science in Agriculture (BS in A) students towards environmental laws and issues. Specifically, this

study aimed to (1) determine the level of awareness and understanding of Bachelor of Science in Agriculture students toward environmental laws and their reinforcement, (2) determine the attitudes of Bachelor of Science in Agriculture students toward environmental laws, (3) determine the perception toward Environmental Laws and their reinforcement, and (4) determine the pro-environmental behavior of Bachelor of Science in Agriculture students. The objectives of this study were achieved by conducting a survey among BS in Agriculture students at the DEBESMSCAT-Cawayan Campus. The survey questionnaire was designed to measure the student's knowledge, attitudes, and pro-environmental behavior toward environmental laws and issues.

### MATERIALS AND METHODS

## **Research Design and Sampling**

The study employed a descriptive research approach to assess the level of awareness among agriculture students at the DEBESMSCAT-Cawayan campus regarding environmental laws and issues. The target population consisted of agriculture students at all academic levels, including first and second-year students. Data collection involved the use of survey questionnaires adopted from the study of Renandang & Dalonos (2019) and administered to the respondents. The respondents for this research comprised a total of 104 students, distributed across different classes as follows: 32 students from BSA-1A, 34 students from BSA-1B, 20 students from BSA-2A, and 18 students from BSA-2B. The responses provided by the respondents served as the primary data source for this study, which exclusively focused on the agriculture students of the DEBESMSCAT-Cawayan campus. The researchers utilized a census approach to ensure that all agriculture students had the opportunity to respond to the study conducted.

# **Data Collection and Statistical Analysis**

To collect data, a structured questionnaire encompassing relevant aspects related to the study was given to each respondent. The questionnaire was administered to the respondents in person. The researchers went to the classrooms and asked the respondents to participate in the study. The researchers explained the purpose of the study and the procedures involved. The respondents who agreed to participate were given a questionnaire to fill out. The respondents were asked to answer the questionnaire, they returned it to the researchers. The researchers also conducted interviews with a small number of respondents. The interviews were conducted to get a deeper understanding of the respondents' thoughts and feelings about environmental laws and issues. The interviews were semi-structured, which means that the researchers had a list of questions, but they were also able to ask follow-up questions to get more information. The interviews were recorded and transcribed for analysis.

The data collected from the questionnaire was analyzed using descriptive statistics. Descriptive statistics are used to summarize and describe data. Frequency counts are used to count the number of respondents who gave a particular answer to a question. Percentage is used to express the frequency counts as a percentage of the total number of respondents. Mean is the average of all the scores for a particular variable. The 5-point Likert scale was used to analyze the gathered data. The Likert scale is a psychometric scale that is used to measure the respondents' attitudes, beliefs, and opinions. The mean ranges for the level of environmental concepts were interpreted as, 4.21-5.00 (Always), 4.20-3.41 (Often), 2.61-3.40 (Sometimes), 1.81-2.60 (Rarely), 1.00-1.80 (Never). In addition to the 5-point Likert scale, a 4-point Likert scale and a 3-point Likert scale were also used in this study. The 4-point Likert scale had the following four response options; 3.26-4.0 (Excellent-Highly Aware), 2.51-3.25 (Good-Aware), 1.76-2.50 (Fair-Fairly Aware), and 1.0-1.75 (Poor-Not Aware). The 3-point Likert scale had these three response options, 2.34-3 (Agree), 1.67-2.33 (Disagree), and 1-1.66 (Disagree). The 2-point Likert scale had these two response options, 1.51-2.00 (Agree) and 1-1.50 (Disagree).

#### **RESULTS AND DISCUSSION**

#### Awareness, Understanding, and Knowledge of Environmental Laws

The study conducted by Rahmani et al. (2021) emphasized the importance of public awareness and knowledge in preventing environmental degradation. Similarly, Erhabor & Don (2016) identified the youth's awareness and knowledge as key solutions for environmental protection. Table 1 presents the mean scores and qualitative interpretation of the indicators. The findings revealed that the respondents exhibited a low level of familiarity with environmental laws in the Philippines, as indicated by a mean score of 2.03, categorizing their familiarity as "Not very familiar." Moreover, the students rated their understanding of environmental laws with a mean score of 1.86, indicating a "Fair" level of understanding. Regarding knowledge of penalties for violating environmental laws, the respondents had a mean score of 2.07, denoting a "Fair" level of knowledge. However, their knowledge of the procedure for reporting environmental violations was rated as "Poor," with a mean score of 1.36. This concludes that a large number of students and agriculture are not well informed about the different environmental laws, and penalties for violating the environmental laws and they do not know the procedure for reporting environmental violations

In terms of specific legislation, the respondents reported having only a limited understanding of the Philippine Clean Air Act (mean score: 1.97), the Ecological Solid Waste Management Act (mean score: 2.00), and the National Integrated Protected Areas System Act (mean score: 1.92). All three were categorized as having "A little" knowledge. These results indicated that a significant number of students in agriculture lacked sufficient awareness and knowledge of various environmental laws, the penalties associated with violating them, and the proper procedure for reporting violations. Furthermore, the respondents' limited familiarity with specific legislation demonstrated that they possessed only a modest level of knowledge of the Philippine Clean Air Act, Ecological Solid Waste Management Act, and National Integrated Protected Areas System Act. It is noting that these findings contradicted the results of Rogayan & Nebrida (2019), who discovered a high level of environmental awareness among science students. The disparities in findings suggested the possibility of varying levels of environmental knowledge among different academic disciplines.

Indicators	Mean	Qualitative Interpretation
How familiar are you with environmental laws in the Philippines?	2.03	Not very familiar
How would you rate your understanding of environmental laws in the Philippines?	1.86	Fair
How would you rate your knowledge of the penalties for violating environmental laws in the Philippines?	2.07	Fair
How would you rate your knowledge of the procedure for reporting environmental violations in the Philippines?	1.36	Poor
How much do you know about the Philippine Clean Air Act?	1.97	A little
How much do you know about the Ecological Solid Waste Management Act?	2.00	A little
How much do you know about the National Integrated Protected Areas System Act?	1.92	A little

Table 1. Level of awareness, understanding, and knowledge of BSA students towards Environmental laws.

#### **Attitudes Towards Environmental Laws**

Environmental law, which aimed to address environmental issues and promote environmental protection, was enforced through punishments, fines, community service, and even imprisonment for violators (Zhu et al., 2022). An examination of the data presented in Table 2 revealed the respondents' views on the importance of

adhering to environmental laws in the Philippines. Although Table 1 indicated that they possessed limited familiarity with these laws, they still perceived following them as highly important and potentially effective (Ahmad et al., 2015).

Table 2. Attitudes of the BS in Agriculture students toward environmental laws.		
Indicators	Mean	Qualitative Interpretation
How do you think it is to follow environmental laws in the Philippines?	3.56	Very important
To what extent do you agree or disagree with the statement Enforcing Environmental Laws in the Philippines is essential for the preservation of natural resources?	3.21	Agree

Table 2 displays the respondents' attitudes toward environmental laws, with corresponding indicators, mean scores, and qualitative interpretations. With a mean score of 3.56, the respondents considered it very important to comply with environmental laws in the Philippines. Furthermore, when asked about their level of agreement with the statement "Enforcing Environmental Laws in the Philippines is essential for the preservation of natural resources," the respondents provided an average score of 3.21, indicating agreement. This result shows that respondents believe environmental laws are important in preserving and protecting the environment. Despite being not well informed, the respondents are confident about the effectiveness of environmental laws in the Philippines. The findings suggested that the respondents acknowledged the significance of adhering to environmental laws in preserving natural resources. Despite their limited awareness and knowledge about specific environmental laws and concepts, they expressed a belief in the importance of these laws for environmental preservation and protection. Remarkably, even without being well-informed, the respondents exhibited confidence in the effectiveness of environmental laws in maintaining a healthy environment.

### **Perception Toward Environmental Laws and their Enforcement**

Environmental law aims to safeguard the land, water, and air, with its various facets designed to ensure the protection of the environment (El-Mallah, 2019). In a recent study, researchers examined public perception regarding the enforcement of environmental laws in the Philippines, revealing noteworthy findings. Table 3 presents the results obtained from the survey conducted on respondents' perceptions of environmental laws and their enforcement. The participants were asked to rate the effectiveness of the enforcement of environmental laws, their confidence in the government's ability to enforce these laws, and their perception of the general public's awareness of environmental laws in the Philippines. According to the findings, the respondents indicated a mean rating of 2.94 for the effectiveness of environmental law enforcement, implying that they considered it somewhat effective. Additionally, the respondents expressed a moderate level of confidence, with a mean rating of 2.84, in the government's capability to enforce environmental laws. However, when considering the general public's awareness of environmental laws, the respondents provided a significantly lower mean rating of 1.54, suggesting a lack of awareness.

Table 5. Perception of the BS in Agriculture students toward Environmental Laws and their Enforcement		
Indicators	Mean	Qualitative Interpretation
How effectively do you think the enforcement of environmental laws in the Philippines?	2.94	Somewhat effective
How confident do you feel in the government's ability to enforce environmental laws in the Philippines?	2.84	Somewhat confident
How do you think the general public is aware of environmental in the Philippines?	1.54	No

Table 3 Perception of the BS in Agriculture students toward Environmental Laws and their Enforcement

These results indicated that although the respondents regarded the enforcement of environmental laws as somewhat effective and expressed some confidence in the government's ability to enforce them, they believed that the general public remained insufficiently aware of these laws. Therefore, there appeared to be a discrepancy between the respondents' perception of enforcement effectiveness and confidence in the government and their assessment of the public's awareness of environmental laws in the Philippines. Policymakers and environmental advocates had to address this gap in public awareness to enhance the overall effectiveness of environmental law enforcement. By implementing targeted awareness campaigns and educational initiatives, the government could strive to improve public understanding and engagement with environmental laws, thereby fostering a more sustainable and environmentally conscious society.

### **Pro-environmental Behavior**

Pro-environmental behavior was examined in the study to assess the extent to which Bachelor of Science in Agriculture students engage in activities aimed at minimizing environmental issues (Tian & Xinyu, 2022). The results presented in Table 4 indicated the frequency and qualitative interpretation of various pro-environmental behaviors. According to the findings, the respondents reported occasionally engaging in recycling (mean = 3.31) and usually disposing of their waste by throwing it in the trash (mean = 1.42). They expressed frequent conservation of energy at home (mean = 3.83), and a significant proportion had participated in community clean-up or tree-planting activities (mean = 1.79). In terms of actively trying to reduce their carbon footprint, the respondents reported doing so occasionally (mean = 3.24). They also indicated occasional use of public transportation (mean = (2.72) and a preference for often purchasing environmentally friendly products (mean = 3.73). Additionally, the majority of respondents strongly agreed (mean = 4.53) that individuals had a responsibility to protect the environment. This study concludes that even if the respondents are not fully aware of the environmental laws in the Philippines they are taking action to solve the issues in the surroundings. They do recycling, dispose of their waste, and often conserve energy. The respondents are also participating in a community cleanup or tree planting activity. Despite agriculture student lack of information about the said laws, they still taking some actions to save the environment.

Overall, the data suggested that the Bachelor of Science in Agriculture students demonstrated a range of pro-environmental behaviors. They engaged in recycling and energy conservation to some extent. Moreover, they actively participated in community activities aimed at addressing environmental issues, indicating a sense of responsibility towards the environment. Although their efforts to reduce their carbon footprint and use public transportation were occasional, they showed a preference for purchasing environmentally friendly products. These findings highlighted the students' willingness to take action despite their limited awareness of environmental laws in the Philippines, as indicated in Table 1. Despite the respondents' lack of comprehensive knowledge about these laws, they still demonstrated concern for the environment by actively contributing to its preservation. This suggested that agricultural students, despite their limited awareness, possessed genuine care for the environment and actively engaged in actions to support its well-being.

Table 4. Pro-environmental Behavior of the BS in Agriculture Students		
Indicators	Mean	Qualitative Interpretation
How often do you recycle?	3.31	Sometimes
How do you usually dispose of your waste?	1.42	Throw it in the trash
Do you conserve energy at home?	3.83	Often
Have you ever participated in a community clean- up or tree-planting activity	1.79	Yes
Do you actively try to reduce your carbon footprint?	3.24	Sometimes
How often do you use public transportation?	2.72	Sometimes
How often do you purchase environmentally friendly produc	3.73	Often
Do you think that individuals have a responsibility to protect our environment?	4.53	Strongly Agree

#### **Environmental Practices of the BS in Agriculture Students**

In the study on environmental practices conducted by the researchers, it was found that good environmental practices were actions that were intended to minimize environmental issues (Yue et al., 2020). The data presented in Table 5 indicated that the respondents engaged in various environmental practices. Specifically, the respondents stated that they had recycled by using plastic bottles as planting material, with plastic bottles being the most commonly segregated material. In addition, they conserve energy by unplugging unused appliances.

Furthermore, the respondents reported frequent participation in clean-up or tree-planting activities. They also adopted ways to reduce their carbon footprint, such as avoiding burning plastic and choosing to walk instead of using vehicles. When it came to using public transportation, the factor that influenced the respondents the most was laziness. On the other hand, the factor that influenced their decision to purchase environmentally friendly products was their love for the environment. The respondents believed that everyone had a responsibility to protect the environment because they were the beneficiaries of it. Upon analyzing the overall results, the researchers observed an inconsistency between the awareness, behavior, and attitude of the students toward the environment. The awareness level of the students did not have a significant impact on their behavior and attitude. Interestingly, even though the agriculture students were not aware of environmental laws, they still took action to protect and preserve the environment.

Table 5. Environmental practices of BS in Agriculture students			
Indicators	Mean	Qualitative Interpretation	
Ways of recycling?	1.72	Use Plastic bottle as planting material	
What materials do you segregate?	1.00	Plastic bottle	
How do you conserve energy at home?	1.00	Unplug the unused appliances	
How often do you participate in clean-up or tree- planting activities?	2.37	Rarely	
Ways to reduce Carbon footprint	1.56	Avoid burning plastic	
What factors influence your decision to use public transportation?	2.43	Laziness	
What factors influence your decisions to purchase environmentally-friendly products?	1.00	Love to environment	
Why do you think that have or do not have a responsibility to protect the environment?	1.00	Because we are the beneficiaries of the environment	

### CONCLUSION AND RECOMMENDATION

The study revealed that Bachelor of Science in Agriculture students have a low level of awareness and knowledge regarding environmental laws in the Philippines. Their familiarity with environmental laws was rated as "Not very familiar," and their understanding and knowledge of penalties for violating these laws were categorized as "Fair." Their knowledge of the procedure for reporting environmental violations was rated as "Poor." Similarly, their familiarity with specific legislation, such as the Philippine Clean Air Act, Ecological Solid Waste Management Act, and National Integrated Protected Areas System Act, was found to be limited. Despite their limited awareness and knowledge of environmental laws, the respondents demonstrated positive attitudes toward environmental laws in the Philippines. They considered it very important to follow these laws and agreed that enforcing them is essential for the preservation of natural resources. This suggests that while the respondents may not possess comprehensive knowledge about specific laws, they recognize the importance of adherence to environmental laws for environmental preservation. The respondents perceived the enforcement of environmental laws in the Philippines as somewhat effective, and they expressed a moderate level of confidence in the government's ability to enforce these laws. However, they believed that the general public has a low level of

awareness regarding environmental laws. This perception highlights the need for targeted awareness campaigns and educational initiatives to bridge the gap in public knowledge and enhance the effectiveness of environmental law enforcement. The Bachelor of Science in Agriculture students exhibited a range of pro-environmental behaviors, including recycling, energy conservation, participation in community activities, efforts to reduce carbon footprint, use of public transportation, and preference for environmentally friendly products. These behaviors indicate a genuine concern for the environment and a sense of responsibility among the respondents, despite their limited awareness of environmental laws. The students reported engaging in specific environmental practices such as using plastic bottles as planting material, segregating plastic bottles, conserving energy by unplugging unused appliances, participating in clean-up or tree-planting activities, and adopting ways to reduce their carbon footprint. Their motivations for these practices included their love for the environment and their belief that individuals have a responsibility to protect it.

The study found that BS in Agriculture students have limited familiarity with environmental laws and specific legislation. This is a significant gap, as BS in Agriculture students are the future of agriculture and will play a critical role in protecting the environment. To address this gap, it is recommended to incorporate environmental law education into the curriculum of Bachelor of Science in Agriculture programs. This can include dedicated courses or modules that provide comprehensive knowledge of relevant environmental laws, penalties, and reporting procedures. Additionally, workshops, seminars, and awareness campaigns should be organized to enhance awareness among the students and improve their understanding of environmental legislation. Academic institutions, government agencies, and environmental organizations should collaborate to develop and implement joint initiatives aimed at increasing awareness and knowledge of environmental laws among students. This can involve organizing guest lectures, symposiums, and field visits to environmental law enforcement agencies, as well as fostering partnerships for research and practical training opportunities related to environmental law compliance. The study also found that many environmental laws are not being effectively enforced in the Philippines. This is contributing to environmental degradation. To address this, policymakers and environmental advocates should prioritize efforts to strengthen the enforcement of environmental laws. This can be achieved through capacity building, training programs, and resource allocation for law enforcement agencies. Additionally, targeted awareness campaigns should be designed to raise public awareness of environmental laws, their importance, and reporting procedures. Finally, the study found that BS in Agriculture were generally supportive of sustainable practices, but they were not always aware of how to implement them. To address this, it is recommended to promote and incentivize sustainable practices in agricultural settings. This can be done by providing training on sustainable farming techniques, waste management practices, and energy-efficient technologies. Additionally, initiatives that highlight the economic and environmental benefits of adopting sustainable practices can encourage broader participation among agricultural communities.

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